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09/162,992	09/30/1998	TADASHI SENOO	3712174.00037	9466

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EXAMINER	
DOVE, TRACY MAE	

ART UNIT	PAPER NUMBER
1726	

NOTIFICATION DATE	DELIVERY MODE
02/13/2012	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

chicago.patents@klgates.com

Office Action Summary	Application No. 09/162,992	Applicant(s) SENOO ET AL.
	Examiner TRACY DOVE	Art Unit 1726

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2012*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *26-32 and 35-41* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *26-32 and 35-41* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the communication filed on 1/27/12. Applicant's arguments have been considered, but are not persuasive. Claims 26-32 and 35-41 are pending. This Action is FINAL.

Claims Analysis

Note "comprises sintered meso-carbon micro-beads" in claim 26 and "the meso-carbon micro-beads are sintered at a temperature between 2500°C and 3500°C" in claim 39 are product-by-process limitations that are not given patentable weight, in the absence of unexpected results. The claims require a graphite material. The meso-carbon micro-bead starting material used to obtain the graphite material is not given patentable weight in the absence of unexpected results.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 26-32 and 35-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacFadden, US 5,772,934 in view of Maruyama et al., US 6,280,878.

MacFadden teaches a lithium polymer battery comprising composite electrolyte-electrode sheets formed on current collectors that are then coated with solid polymer electrolyte (separate solid polymer electrolyte layer) prior to battery assembly (abstract).

The SPE is located both internally and at the surface of the electrode structure (3:31-40). One or both of the electrodes of the battery can be further coated with additional SPE to provide an electrical insulator between electrodes of opposite polarity (5:27-40). The battery includes a cathode including a lithium transition metal compound (3:66-4:8), an anode including a carbon material such as graphite (4:9-15) and a solid polymer electrolyte (SPE) including a salt, a polymer and liquid. The electrolyte may include polyacrylonitrile (PAN) as the polymer, $LiPF_6$ as the salt and a mixture of ethylene carbonate and propylene carbonate in a ratio of 70:30 to 30:70 as the liquid (5:11-20). The anode and the cathode include a current collector (3:45-48). The polymer is in an amount of 10-20 wt%, the liquid is in an amount of 65-75 wt% and the salt is in an amount of 5-12 wt% based on the SPE total weight (5:21-25). Example 2 has a specific teaching of 14 wt% $LiPF_6$ salt, 11 wt% PAN and 75 wt% of ethylene carbonate/propylene carbonate. Other liquids suitable for use as the solvent include dimethyl carbonate, diethyl carbonate and γ-butyrolactone (2:21-28). The polymer binder may comprise polyvinylidene fluoride (clm 6).

MacFadden is silent regarding the mean particle size of the graphite material. However, Maruyama teaches a lithium secondary gel electrolyte battery (title; abstract). The battery includes an electrode comprising a carbon active material. The carbon active material is preferably graphite having a mean particle size of 1 to 30 μm, especially 5 to 25 μm. Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because a smaller mean particle size tends to reduce the charge/discharge cycle life and to

increase the variation of capacity. A larger mean particle size would lead to a significantly greater variation of capacity and a lower average capacity. It is believed that a variation of capacity results from a larger mean particle size because the contact of graphite with the collector and the contact between graphite particles become inconsistent (5:9-20). Thus, one of skill would have been motivated to provide the graphite particles of MacFadden with the mean particle size disclosed by Maruyama.

While MacFadden does not explicitly state the number average molecular weight of the PAN, this limitation is considered obvious in view of the teaching by MacFadden that PAN may be used as the polymer of the SPE. Regarding claim 30, Maruyama teaches the concentration of the electrolyte salt (such as $LiPF_6$) in the electrolytic solution is preferably about 0.1 to 5 mol/liter and that maximum conductivity is generally available at a concentration of about 1 mol/liter (5:34-50). See also Example 1 of Maruyama. The limitation "comprises sintered meso-carbon micro-beads" is a product-by-process limitation that is not given patentable weight.

*

Claims 26-32 and 35-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacFadden, US 5,772,934 in view of Ozaki et al., US 5,522,127.

MacFadden teaches a lithium polymer battery comprising composite electrolyte-electrode sheets formed on current collectors that are then coated with solid polymer electrolyte (separate solid polymer electrolyte layer) prior to battery assembly (abstract). The SPE is located both internally and at the surface of the electrode structure (3:31-40). One or both of the electrodes of the battery can be further coated with additional

SPE to provide an electrical insulator between electrodes of opposite polarity (5:27-40). The battery includes a cathode including a lithium transition metal compound (3:66-4:8), an anode including a carbon material such as graphite (4:9-15) and a solid polymer electrolyte (SPE) including a salt, a polymer and liquid. The electrolyte may include polyacrylonitrile (PAN) as the polymer, $LiPF_6$ as the salt and a mixture of ethylene carbonate and propylene carbonate in a ratio of 70:30 to 30:70 as the liquid (5:11-20). The anode and the cathode include a current collector (3:45-48). The polymer is in an amount of 10-20 wt%, the liquid is in an amount of 65-75 wt% and the salt is in an amount of 5-12 wt% based on the SPE total weight (5:21-25). Example 2 has a specific teaching of 14 wt% $LiPF_6$ salt, 11 wt% PAN and 75 wt% of ethylene carbonate/propylene carbonate. Other liquids suitable for use as the solvent include dimethyl carbonate, diethyl carbonate and γ-butyrolactone (2:21-28). The polymer binder may comprise polyvinylidene fluoride (clm 6).

MacFadden does not explicitly teach the graphite material has a mean particle size of 5 to 100 μm. MacFadden does not explicitly teach the graphite material comprises sintered meso-carbon micro beads.

However, Ozaki teaches a non-aqueous electrolyte secondary cell having a negative electrode of carbon material to which intercalation by charging and deintercalation by discharging of lithium is possible (1:8-12). The negative electrode is made from mesophase graphite particles. The mesophase graphite particles are produced from micro beads of mesophase carbon made from pitch (3:1-7). The average particle diameter of the graphite particles is in the range of 3-10 μm, preferably

5-7 μm (6:35-43). A favorable range of the specific surface area of the mesophase graphite particles is 1.0 to 8.0 m^2/g, preferably 2.5 to 5.0 m^2/g. The graphitization temperature of the mesophase carbon microbeads is in the range of 2400-3000˚C, preferably 2600-2800˚C to obtain fully graphitized carbon material (6:50-65). The negative electrode was fabricated by mixing the mesophase graphite particles with styrene butadiene rubber (binder) to obtain a paste. A copper foil (current collector) of 0.02 mm thickness was coated with the paste of both surfaces. The concentration of $LiPF_6$ with respect to the non-aqueous solvent is 1 mol/l (mol/cm^3) (4:55-58).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have found it obvious to use the negative electrode of Ozaki for the negative electrode of MacFadden. Ozaki teaches that the negative electrode including mesophase graphite leads to smooth intercalating of lithium at charging over a wide temperature range resulting in an increased cell capacity (3:12-14). MacFadden teaches the negative electrode may be a carbonaceous material, preferably graphite, capable of intercalating lithium. Both Ozaki and MacFadden teach nonaqueous secondary cells having a negative electrode including graphite and a nonaqueous electrolyte comprising a lithium salt and a mixed solvent (4:54-58 of Ozaki). One of skill would have been motivated to use the graphite negative electrode of Ozaki as the graphite negative electrode of MacFadden because both materials are capable of intercalating lithium and the graphite negative electrode of Ozaki leads to increased cell capacity.

While MacFadden does not explicitly state the number average molecular weight of the PAN, this limitation is considered obvious in view of the teaching by MacFadden that PAN may be used as the polymer of the SPE.

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Claims 26-32 and 35-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akashi, EP 0724305 in view of Ozaki et al., US 5,522,127.

Akashi teaches a gel electrolyte and a lithium secondary cell using the gel electrolyte. The cell includes a positive electrode which may be a lithium/transition metal composite oxide, a negative electrode which may be a carbonaceous material such as graphite and the gel electrolyte (5:8:16). The non-aqueous solvent and the electrolyte salt used for the production of the gel electrolyte may be those generally used for the production of a lithium secondary cell. The solvent may preferably be ethylene carbonate (EC), propylene carbonate (PC), γ-butyl lactone or mixtures thereof. The preferred salt is $LiPF_6$. A mixture containing EC and PC in combination is preferred (4:1-12). The gel electrolyte further includes a polymer having a side chain to which at least one nitrile group is bonded. The polymer is preferably polyacrylonitrile (PAN) and has a number-average molecular weight ranging from about 50,000 to 500,000 (3:45-59). A molar ratio of a monomer as a repeating unit of the PAN to the non-aqueous solvent is suitably in the range of 5:95 to 30:70 though it varies depending upon kinds of the non-aqueous solvent, the gelling agent and the electrolyte salt used. The lithium salt may be in a concentration of 0.4 to 2 M (4:13-17; 31-32). Tables 1 & 2 teach a gel electrolyte including PAN, EC and PC where PC is 10-38 mol% of the gel electrolyte.

Akashi does not specifically teach the negative electrode of claim 26. Akashi teaches lithium secondary cells are well known to have a negative electrode made of a material such as lithium, a lithium alloy or a carbonaceous material capable of occluding lithium (2:12-17). Akashi further teaches examples of suitable negative electrode activating ingredients may include lithium, a lithium alloy and a carbonaceous material capable of occluding lithium, such as graphite (5:12-16).

However, Ozaki teaches a non-aqueous electrolyte secondary cell having a negative electrode of carbon material to which intercalation by charging and deintercalation by discharging of lithium is possible (1:8-12). The negative electrode is made from mesophase graphite particles. The mesophase graphite particles are produced from micro beads of mesophase carbon made from pitch (3:1-7). The average particle diameter of the graphite particles is in the range of 3-10 μm, preferably 5-7 μm (6:35-43). A favorable range of the specific surface area of the mesophase graphite particles is 1.0 to 8.0 m^2/g, preferably 2.5 to 5.0 m^2/g. The graphitization temperature of the mesophase carbon microbeads is in the range of 2400-3000°C, preferably 2600-2800°C to obtain fully graphitized carbon material (6:50-65). The negative electrode was fabricated by mixing the mesophase graphite particles with styrene butadiene rubber (binder) to obtain a paste. A copper foil (current collector) of 0.02 mm thickness was coated with the paste of both surfaces.

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have found it obvious to use the negative electrode of Ozaki for the negative electrode

of Akashi. Ozaki teaches that the negative electrode including mesophase graphite leads to smooth intercalating of lithium at charging over a wide temperature range resulting in an increased cell capacity (3:12-14). Akashi teaches the negative electrode may be a carbonaceous material such as graphite that is capable of occluding lithium (intercalating). Both Ozaki and Akashi teach nonaqueous secondary cells having a negative electrode including graphite and a nonaqueous electrolyte comprising a lithium salt and a mixed solvent (4:54-58 of Ozaki). One of skill would have been motivated to use the graphite negative electrode of Ozaki as the graphite negative electrode of Akashi because both materials are capable of intercalating lithium and the graphite negative electrode of Ozaki leads to increased cell capacity. Akashi teaches polyvinylidene fluoride is a known electrode binder (page 10, lines 33-34).

Response to Arguments

Applicant's arguments filed 1/27/12 have been fully considered but they are not persuasive.

35 USC 103(a) rejection: MacFadden in view of Maruyama

Applicant argues neither MacFadden nor Maruyama disclose or suggest a gel electrolyte secondary cell wherein the negative electrode material comprises sintered meso-carbon micro-beads, as recited in claim 26. The only limitation of claim 26 not disclosed by MacFadden and/or Maruyama is the process limitation "sintered meso-carbon micro-beads", which has not been given patentable weight. The material used to obtain the graphite is not given patentable weight in the absence of unexpected results. Applicant argues the phrase "comprises sintered meso-carbon micro-beads" is

not a product-by-process limitation but rather the recitation of a specific material. However, Applicant does not define or identify the asserted specific material. The specification recites the obtained material is graphite. Both MacFadden and Maruyama teach a graphite negative electrode active material. Applicant does not provide persuasive arguments of unexpected results over MacFadden in view of Maruyama.

Applicant argues one of ordinary skill in the art would understand that graphite materials exhibit widely varying physical properties based on the starting material and the production process and are therefore distinguishable from each other. However, even if this argument were to be found persuasive, “distinguishable from” does not equate to “unobvious from”. Furthermore, MacFadden is silent regarding the starting material used to produce the disclosed graphite anode active material. Evidence of unexpected results must distinguish the claimed invention over the prior art of record. Table 1 of the present specification does not provide evidence of unexpected results because MacFadden does not teach the graphite is produced by firing petroleum coke. Furthermore, the different initial charging/discharging efficiencies shown in Table 1 could have resulted from the method used to produce the graphite material or the varying specific surface area values, and not the starting material alone used to produce the graphite active material. In addition, Maruyama teaches the anode active material may be natural or artificial graphite, resin fired carbon materials and carbon fibers.

Applicant has not provided persuasive evidence that the single graphite material obtained in Comparative Example 1 of the present specification is the closest prior art. Examiner points out the differences in specific surface area between the asserted

inventive examples versus the comparative examples of the present specification. The differences is charging/discharging efficiency could have resulted from the amount of pulverization applied to the graphite material and not be at all related to the starting material used to form the graphite material of the negative electrode.

35 USC 103(a) rejection: MacFadden in view of Ozaki

Applicant argues Ozaki suggests that propylene carbonate is disfavored. **This argument has been addressed previously in this application by the Board of Patent Appeals on 1/19/06 and has been determined to be non-persuasive.** Applicant has neither addressed the Examiner's motivation for combining MacFadden and Ozaki nor shown the claimed negative electrode material has unexpected properties over the negative electrode material disclosed by Ozaki. Applicant states Ozaki teaches that propylene carbonate is not suitable for use with mesophase particles because it decomposes to generate a gas during charging. Examiner points out the claims on appeal require as little as 10 mol% of propylene carbonate. Ozaki is not cited to teach the components of the gel electrolyte. MacFadden teaches a graphite negative electrode active material in combination with an electrolyte solvent containing propylene carbonate.

Examiner points out that the section of Ozaki cited by Applicant as assertedly teaching away from the claimed invention (col. 2, lines 3-6) is part of the background section of Ozaki. Ozaki teaches a non-aqueous electrolyte secondary cell having a negative electrode of carbon material to which intercalation by charging and deintercalation by discharging of lithium is possible (1:8-12). The negative electrode is

made from mesophase graphite particles. The mesophase graphite particles are produced from micro beads of mesophase carbon made from pitch (3:1-7). The average particle diameter of the graphite particles is in the range of 3-10 μm, preferably 5-7 μm (6:35-43). The graphitization temperature of the mesophase carbon microbeads is in the range of 2400-3000°C, preferably 2600-2800°C to obtain fully graphitized carbon material (6:50-65). Tables 1 and 2 are not applicable to the rejection of record because Ozaki teaches mesophase graphite particles (not fired petroleum coke as required by Comparative Examples 1 and 2).

One having ordinary skill would have found it obvious to use the negative electrode of Ozaki for the negative electrode of MacFadden. Ozaki teaches that the negative electrode including mesophase graphite leads to smooth intercalating of lithium at charging over a wide temperature range resulting in an increased cell capacity (3:12-14). MacFadden teaches the negative electrode may be a carbonaceous material, preferably graphite, capable of intercalating lithium. Both Ozaki and MacFadden teach nonaqueous secondary cells having a negative electrode including graphite and a nonaqueous electrolyte comprising a lithium salt and a mixed solvent (4:54-58 of Ozaki). One of skill would have been motivated to use the graphite negative electrode of Ozaki as the graphite negative electrode of MacFadden because both materials are capable of intercalating lithium and the graphite negative electrode of Ozaki leads to increased cell capacity. MacFadden discloses the electrolyte may include a mixture of ethylene carbonate and propylene carbonate in a ratio of 70:30 to 30:70 as the liquid (5:11-20).

Furthermore, as pointed out by the Board (page 5 of 1/19/06 decision), "Nor have appellants established that the use of propylene carbonate as the only solvent in appellant's secondary cell would not experience the disadvantageous decomposition of propylene carbonate with the evolution of gas taught by Ozaki".

Applicant continues to argue the references separately when the rejection is based upon the combination of MacFadden and Ozaki. MacFadden teaches the claimed gel electrolyte including the claimed solvent combination of ethylene carbonate and 10-75 mol% propylene carbonate. MacFadden teaches the negative electrode may be a carbon material such as graphite. Ozaki teaches the claimed graphite material obtained by sintering mesocarbon micro-beads. Ozaki teaches that the negative electrode including mesophase graphite leads to smooth intercalating of lithium at charging over a wide temperature range resulting in an increased cell capacity (3:12-14). MacFadden teaches the negative electrode may be a carbonaceous material, preferably graphite, capable of intercalating lithium. Both Ozaki and MacFadden teach nonaqueous secondary cells having a negative electrode including graphite and a nonaqueous electrolyte comprising a lithium salt and a mixed solvent (4:54-58 of Ozaki). One of skill would have been motivated to use the graphite negative electrode of Ozaki as the graphite negative electrode of MacFadden because both materials are capable of intercalating lithium and the graphite negative electrode of Ozaki leads to increased cell capacity.

<u>35 USC 103(a) rejection: Akashi in view of Ozaki</u>

Applicant asserts the skilled artisan would have no reason to combine Akashi and Ozaki to arrive at the present claims for reasons similar to those set forth above. Applicant argues Ozaki teaches away from using its mesophase carbon particles with propylene carbonate. This exact rejection and argument have previously been before the Board. The decision of 1/19/06 affirmed the Examiner and deemed this argument not persuasive.

The specification does not provide unexpected results over the prior art of record because the combination of Akashi and Ozaki renders the claimed invention obvious. Comparative Examples 1 and 2 of the present specification are not representative of the teaching of Akashi in view of Ozaki.

Applicant argues Akashi does not teach or suggest a negative electrode material that includes a graphitized carbonaceous material including sintered meso-carbon microbeads. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The cited art (Akashi and Ozaki) teach all of the features of the claimed invention. Akashi teaches the gel electrolyte of the claimed invention and Ozaki teaches the negative electrode of the claimed invention. Akashi suggests the negative electrode of the claimed invention because the reference teaches the negative electrode may be a carbonaceous material such as graphite (5:12-16).

It is important to point out that Akashi teaches a negative electrode comprising a graphitized carbonaceous material. Akashi does not teach how the graphitized carbonaceous material is produced. Thus, since the limitation “sintered meso-carbon micro-beads” is a product-by-process limitation, the burden shifts to Applicant to provide an unobvious or unexpected difference between Akashi and the claimed invention (MPEP 2113). Applicant has not provided any evidence of an unobvious or unexpected difference between Akashi and the claimed invention. Furthermore, Applicant’s arguments with respect to the process limitation are not relevant because Ozaki teaches the limitation. Ozaki teaches the graphitization temperature of the mesophase carbon microbeads is in the range of 2400-3000˚C, preferably 2600-2800˚C to obtain fully graphitized carbon material (6:50-65).

Applicant argues Akashi and the claimed invention seek to solve different problems in the art. Applicant argues the claimed invention can provide enhanced discharge capacity and charging/discharging efficiency. An object of the invention of Akashi is to provide a cell exhibiting an excellent discharge capacity (2:46-47). Furthermore, Figure 5 of Akashi shows charging and discharging efficiencies of the cells were 90% or higher at both the second and fifth charging and discharging cycles (11:15-17). Thus, this argument is not convincing.

Applicant’s main argument is that the Patent Office cannot rely solely of Ozaki to remedy the deficiencies of Akashi because the teachings are not combinable. Applicant argues Ozaki teaches away from its combination with Akashi because Ozaki disfavors the use of propylene carbonate as an organic solvent of the electrolyte (required by

pending claims). Ozaki states “propylene carbonate is not employed because it decomposes to generate a gas during charging” (7:6-8). However, Ozaki is not applied to teach the electrolyte of the instant claims. Ozaki teaches a negative electrode comprising a graphitized carbonaceous material obtained from a plurality of meso-carbon micro-beads is known in the art. One of skill would be motivated to use the negative electrode of Ozaki for the negative electrode of Akashi because Akashi clearly suggests a negative electrode comprising a graphitized carbonaceous material. Furthermore, it is well known in the art that propylene carbonate decomposes when contacted with a graphite negative electrode. Applicants own disclosure teaches in non-aqueous electrolyte cells employing propylene carbonate as a main solvent and graphite type carbonaceous materials as a negative electrode, propylene carbonate is decomposed in a known manner on the negative electrode with gas evolution (page 5, lines 6-17). It is important to point out that the Ozaki reference teaches propylene carbonate is not favorable as the only solvent. The claims only require as little as 10 mol% of propylene carbonate. Furthermore, the specification indicates that the claimed invention also results in decomposition of propylene carbonate. On page 6, line 1-3 the specification states a graphite material of smaller particle size is less susceptible to decomposition of propylene carbonate, which suppresses the discharge capacity loss. On page 11, lines 7-12 the specification states the claimed negative electrode graphitized carbonaceous material <u>suppresses</u> discharge capacity losses. This indicates that the propylene carbonate of the claimed secondary cell does, at least to some degree, undergo decomposition. Examiner emphasizes that Akashi teaches

combining a graphite negative electrode with an electrolyte containing propylene carbonate. Thus, the prior art does teach and suggest using a propylene carbonate solvent for the electrolyte with a graphitized carbonaceous material negative electrode.

Thus the argument that the references are not combinable is not convincing for at least the following reason:

1. Ozaki is applied as a secondary reference to teach a known negative electrode material comprising a graphitized carbonaceous material obtained from a plurality of meso-carbon micro-beads. Ozaki is not applied to teach the electrolyte of the claimed invention (taught by primary reference);

2. The claimed invention is not limited to a propylene carbonate solvent that does not decompose in the presence of the graphite negative electrode. The invention only indicates that the decomposition is “suppressed”; and

3. The combination of the claimed electrolyte with a graphitized carbonaceous material is taught by the prior art. Akashi teaches and suggests using a propylene carbonate solvent for the electrolyte with a graphitized carbonaceous material negative electrode.

Ozaki teaches that the use of the graphitized carbonaceous material obtained from a plurality of meso-carbon micro-beads lead to increased cell capacity due to smooth intercalating of lithium at charging (3:12-14). Akashi teaches the claimed secondary cell expect for the negative electrode. However, Akashi at least suggests the negative electrode of claimed invention because Akashi teaches the negative electrode may be a carbonaceous material such as graphite (5:12-16). Both Ozaki and Akashi

teach non-aqueous secondary cells having a negative electrode including graphite. Thus the references are combinable.

Tables 1 and 2 are not applicable to the rejection of record because Ozaki teaches mesophase graphite particles (not fired petroleum coke as required by Comparative Examples 1 and 2).

The declaration under 37 CFR 1.132 filed 8/9/11 is insufficient to overcome the rejection of claims 26-32 and 35-41 based upon the cited prior art as set forth in the last Office action because: the declaration does not provide evidence of unexpected results over the prior art of record. Tables 1 and 2 of the present specification are not representative of the prior art of record. Furthermore, Maruyama teaches a smaller mean particle size tends to reduce the charge/discharge cycle life and to increase the variation of capacity. A larger mean particle size would lead to a significantly greater variation of capacity and a lower average capacity. It is believed that a variation of capacity results from a larger mean particle size because the contact of graphite with the collector and the contact between graphite particles become inconsistent (5:9-20). The remaining arguments presented in the declaration have already been addressed above. Thus the declaration is not found persuasive.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday & Tuesday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/TRACY DOVE/

Primary Examiner, Art Unit 1726